



YOKES

MAHWAH, N. J. 07430

FIRST CLASS

Mr. T. Nelson
Systems Consultant
Box 32
Schooleys Mountain, N. J. 07



Constantine Engineering Laboratories Company

70 CONSTANTINE DRIVE
MAHWAH, N. J. 07430
PHONE: 201 - 327-1123

May 13, 1970

Mr. T. Nelson
Systems Consultant
Box 32
Schooleys Mountain, N. J. 07870

Dear Mr. Nelson

Please plan to visit us at the S.I.D. show on May 26-28. We will be in Booth 23. As usual, we will be displaying the very finest in CRT display components and associated circuitry.

The enclosed technical brochures reflect certain upgradings of our products. The YB Deflection Yoke sheet is a replacement for the older catalog sheet Y22 and shows a considerably increased sensitivity throughout.

Our new Ramp Generator, 2SG-5C, is now offered in a cabinet for bench work as well as in the rack-mounted configuration. We feature a synch output pulse and a moveable raster.

The MY sheet has been modernized and should replace Y16 in your CELCO Catalog.

Development work continues in our laboratories on High Resolution Displays, Yokes, Amplifiers and Correction Circuitry to materially improve your research and production displays.

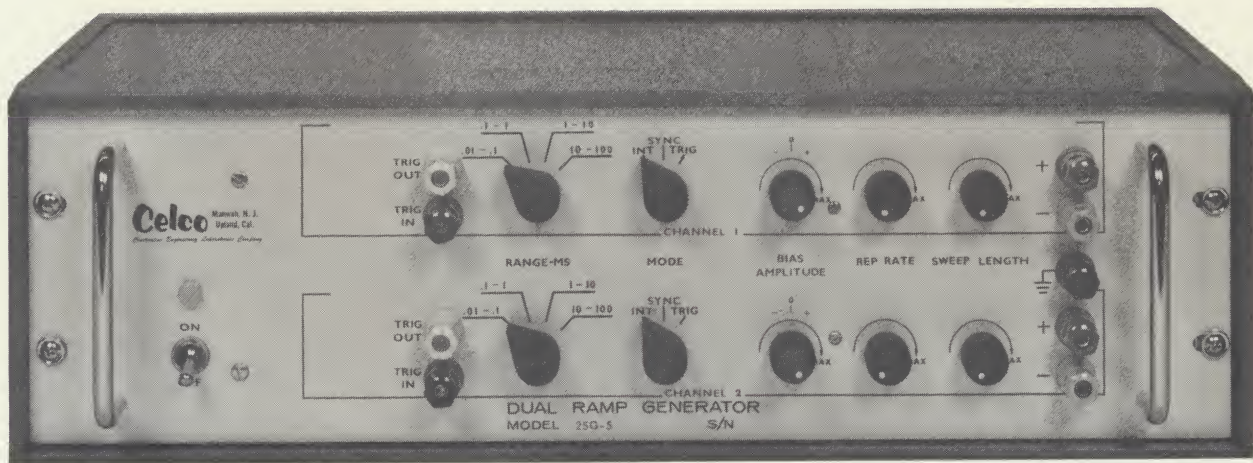
Come in, see our comprehensive group of products and discuss your display problems.

Very truly yours

Edson Ryder
Engineering Sales Manager

2SG-5C

DUAL RAMP GENERATOR



CELCO Model 2SG-5C Dual Axis Ramp Generator with Cabinet

- FOUR OVERLAPPING SWEEP RANGES FROM 10 μ sec to 100msec
- LINEARITY BETTER THAN 0.5%
- GENERATES VARIABLE RASTERS
- EXTERNAL TRIGGERING OR SYNC

The CELCO Model 2SG-5C is an all-silicon, solid-state Dual Axis Ramp Generator which provides the display designer with a versatile tool for producing a wide variety of raster or line scan CRT displays wherever highly linear, variable ramp lengths and rates are required.

The CELCO 2SG-5C features four overlapping sweep ranges from 10 μ sec to 100msec, with optional extended ranges, linearity better than 0.5%, and plus and minus 5V bias about ground.

The CELCO Model Ramp Generator is designed to produce highly linear ramp signals with independent front panel controls for continuously varying the

amplitude, repetition rate, sweep length and dc bias level of the signal.

The unit operates from its own internal repetition rate generator from 10Hz to >50kHz, or can be externally synchronized or triggered.

A sync output pulse is also provided for synchronizing or triggering one generator from the other or for triggering other equipment. All circuitry and controls are mounted in a 6 $\frac{1}{4}$ " x 19 $\frac{3}{4}$ " cabinet (Model 2SG-5C), or on a standard 5 $\frac{1}{4}$ " x 19" rack panel, (Model 2SG-5).

The CELCO 2SG-5 Ramp Generator is fully compatible with CELCO Deflection Amplifiers.

ELECTRICAL SPECIFICATIONS

OUTPUT SIGNAL AMPLITUDE	Approximately 10 volts peak to peak, positive going Continuously adjustable from zero.
OUTPUT IMPEDANCE	10 ohms.
EXTERNAL LOAD	Minimum external load impedance is 100 ohms.
dc OFFSET	The output of each generator can be biased approximately $\pm 5V$ about ground with a continuously variable front panel control.
REPETITION RATE	10Hz - 50kHz
RAMP SIGNAL DURATIONS Four ranges std. with control for continuous adjustments in each range.	Position 1: 10 - 100 μ sec Position 2: 100 - 1000 μ sec Position 3: 1 - 10 msec Position 4: 10 - 100 msec (longer ranges available on request)
LINEARITY	<0.5%
OPERATING MODES Three separate modes determined by front panel selector.	1. Internal: Repetition rate generator free-running. 2. Sync: Repetition rate generator synchronized by external pulse. 3. Triggered: One sweep only for each trigger pulse. Duty cycle and amplitude under internal control.
SYNC OR TRIGGER INPUT	Sync or trigger pulse can be of positive or negative polarity between 2 and 12V with a rise time less than one microsecond, and duration compatible with repetition rate.
TRIGGER OUTPUT PULSE	+5V p-p, rise time < 0.5 μ sec
DUTY CYCLE (sweep length)	Continuously variable from 10 to 90% of the maximum sweep period for repetition rates above 20 μ sec. Amplitude is independent of duty cycle setting.
INPUT POWER	115 volts, 60Hz, approx. 350 mA.

MECHANICAL SPECIFICATIONS

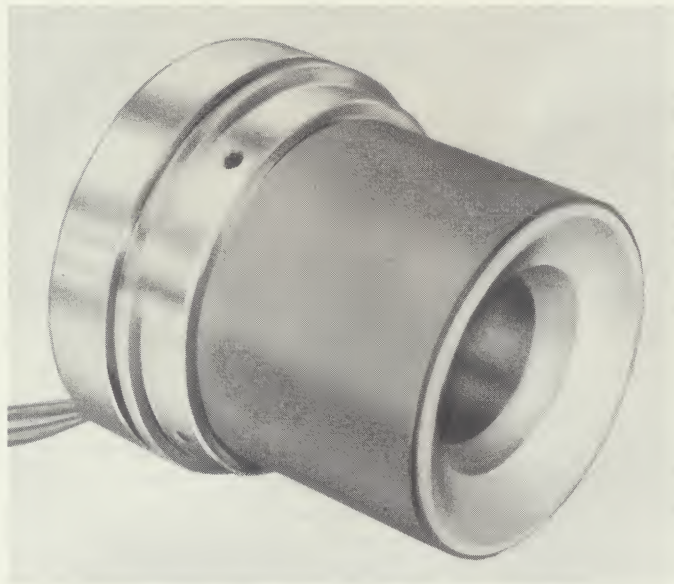
OPERATING TEMPERATURE RANGE	0°C to +50°C	
CONNECTIONS		
2SG-5C	5-way binding posts on front of cabinet. (2SG-5: binding posts on front of rack-unit.)	
2SG-5CR	5-way binding posts at rear of cabinet. (2SG-5R: binding posts at rear of rack-unit.)	
2SG-5CN	BNC connectors on front of cabinet. (2SG-5N: BNC connectors on front of rack-unit.)	
2SG-5CNR	BNC connectors at rear of cabinet. (2SG-5NR: BNC connectors at rear of rack-unit.)	
DIMENSIONS		WEIGHT
2SG- 5C in Cabinet	19 $\frac{3}{4}$ "L x 6 $\frac{1}{4}$ "H x 12"D	20 lbs.
2SG-5 for rack mounting with dust cover.	19"L x 5 $\frac{1}{4}$ "H x 9 $\frac{1}{2}$ "D	14 lbs.

CONSTANTINE ENGINEERING LABORATORIES COMPANY

DEFLECTION YOKE

WIDE BANDWIDTH

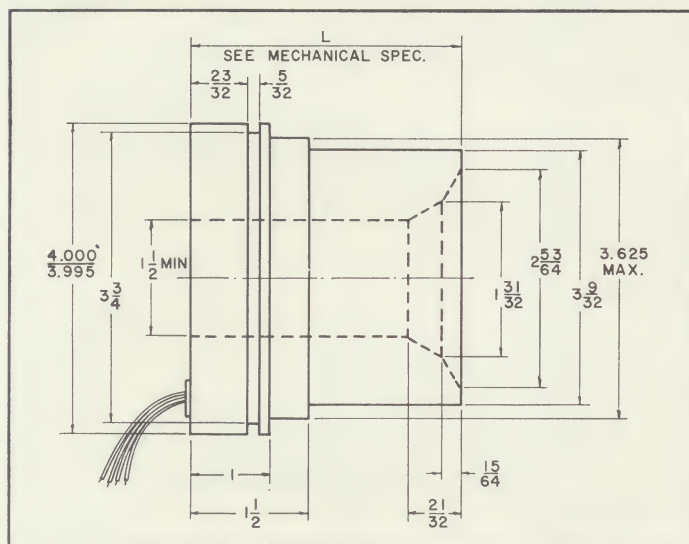
HI-Q HI-SENSITIVITY



CELCO TYPE YB DEFLECTION YOKE

CELCO Type YB_____ Deflection Yokes have been designed to fill the requirement for a high-Q yoke without sacrificing sensitivity while maintaining reasonable residual and resolution. High resolution TV-scanners and TV displays using resonant type ringing circuits require high-Q yokes. Type YB_____ yokes have low core losses and high-Q at the frequencies at which the resonant circuits operate.

YB yokes may also be used advantageously in direct drive, random positioning, alpha-numeric applications where extremely fast initial settling time is required. Any inductance or combination of vertical and horizontal inductances can be supplied.



SPECIFICATIONS

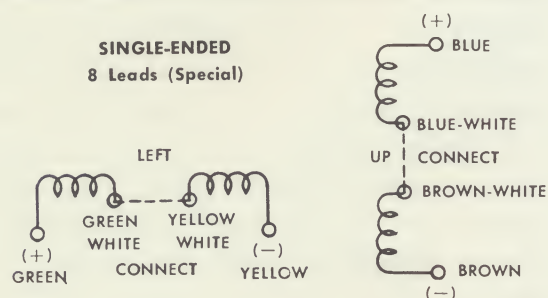
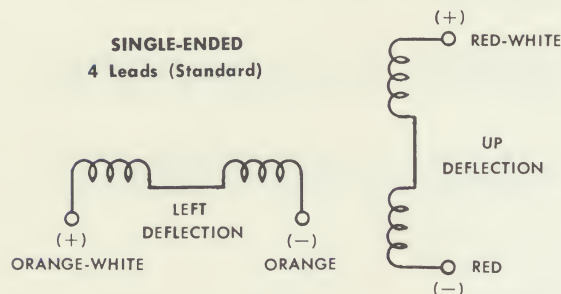
ELECTRICAL

RESIDUAL	0.08% max.
PERPENDICULARITY	$\pm .25^\circ$
COLINEARITY (PUSH-PULL)	$\pm .25^\circ$
LINEARITY $I = k \sin \theta$	0.2% max.
BREAKDOWN VOLTAGE	1500 volts
DISTRIBUTED CAPACITANCE	90-250 pF

MECHANICAL

Type	Deflection Angle Degrees	Weight lbs.	Length Inches max.
YB 449	42	2.8	3 15/16
YB 539	52	2.4	3 7/16
YB 728	70	2.0	2 5/8
YB 921	90	1.7	2 3/16

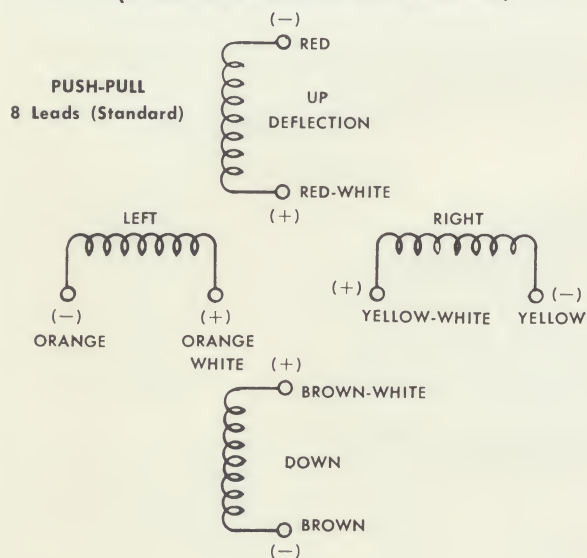
SINGLE-ENDED COIL DATA (ORANGE/WHITE TO ORANGE)



‡ Horizontal Inductance is Listed
Vertical Inductance = $1.11 \times \text{Horiz. Ind.}$

Type Number	Inductance ‡ mH	Current to Deflect One Radius Amperes	Resistance Ohms (Max.)	*Recovery Time Microseconds
42° CRT's (Half-Angle = 21° = 1 Radius)				
YB449-S685	.014	4.2	.07	<1
-S660	.025	3.1	.1	<1
-S600	.1	1.6	.4	<1
-S560	.25	1.0	1	<1
-S500	1	.5	4	1.5
-S400	10	.16	40	4
-S350	32	.09	120	8
52° CRT's (Half-Angle = 26° = 1 Radius)				
YB539-S685	.014	6.0	.08	<1
-S660	.025	4.7	.1	<1
-S600	.1	2.2	.4	<1
-S560	.25	1.4	1.1	<1
-S500	1	.71	4.2	1.8
-S400	10	.22	42	4.5
-S350	32	.13	125	9
70° CRT's (Half-Angle = 35° = 1 Radius)				
YB728-S685	.014	9.1	.09	<1
-S660	.025	6.8	.13	<1
-S600	.1	3.4	.43	<1
-S560	.25	2.15	.9	<1
-S500	1	1.1	4.3	2
-S400	10	.34	44	5
-S350	32	.19	130	10
90° CRT's (Half-Angle = 45° = 1 Radius)				
YB921-S685	.014	12.7	.1	<1
-S660	.025	8.9	.15	<1
-S600	.1	5.0	.5	<1
-S560	.25	3.0	1.0	<1
-S500	1	1.5	4.4	2.5
-S400	10	.48	46	6
-S350	32	.26	140	11

PUSH-PULL DEFLECTION COIL DATA HALF-AXIS WINDING VALUES (BROWN/WHITE TO BROWN)



‡ Vertical Down Inductance Listed
Vertical Up = $1.18 \times \text{Vert. Down}$
Horizontal Left = $1.3 \times \text{Vert. Down}$
Horizontal Right = $1.07 \times \text{Vert. Down}$

* Recovery Time Values refer to Coil Current to 99.0% Decay, Yoke Critically Damped, with 15 pfd Plate Lead Stray Capacity. Where lower Residual is required consult our Engineering Dept.

Distributed Capacitance: 90 to 250 pfd.

42° CRT's (Half-Angle = 21° = 1 Radius)				
YB449-P685	.014	4.2	.18	<1
-P660	.025	3.1	.25	<1
-P600	.1	1.6	1	<1
-P560	.25	1.0	2.5	<1
-P500	1	.5	10	1.5
-P400	10	.16	100	4
-P350	32	.09	300	8
52° CRT's (Half-Angle = 26° = 1 Radius)				
YB539-P685	.014	6.0	.2	<1
-P660	.025	4.7	.3	<1
-P600	.1	2.2	1.1	<1
-P560	.25	1.4	2.8	<1
-P500	1	.71	11	1.8
-P400	10	.22	111	4.5
-P350	32	.13	315	9
70° CRT's (Half-Angle = 35° = 1 Radius)				
YB728-P685	.014	9.1	.25	<1
-P660	.025	6.8	.33	<1
-P600	.1	3.4	1.1	<1
-P560	.25	2.15	3	<1
-P500	1	1.1	12	2
-P400	10	.34	115	5
-P350	32	.19	325	10
90° CRT's (Half-Angle = 45° = 1 Radius)				
YB921-P685	.014	12.7	.3	<1
-P660	.025	8.9	.4	<1
-P600	.1	5.0	1.3	<1
-P560	.25	3.0	3.3	<1
-P500	1	1.5	13	2.5
-P400	10	.48	120	6
-P350	32	.26	350	11

CONSTANTINE ENGINEERING LABORATORIES COMPANY

PACIFIC DIVISION UPLAND, CAL. 91786
TEL. 714-982-0215 TWX: 910-581-3401

SOUTHERN DIVISION MIAMI, FL 33138
TEL. 305-751-1132

EASTERN DIVISION MAHWAH, N.J. 07430
TEL. 201-327-1123 TWX: 710-988-1018

MY514

MINI-YOKE

PRECISION 52° DEFLECTION



TYPE — MY514

For 52° — 7/8" Neck CRT's

SMALL - ID $\frac{31}{32}$ " - OD $1\frac{3}{4}$ " - LENGTH $1\frac{1}{2}$ "

ULTRA-LIGHT - $3\frac{3}{4}$ " oz.

FOR INTEGRATED YOKE — CRT APPLICATIONS

Hand Carried Displays
Fixed Coil PPI
Cockpit
Fire Control

Rotating Systems PPI
Built-In Systems
Situation Displays
Weather Radar

SPECIFICATIONS

ELECTRICAL

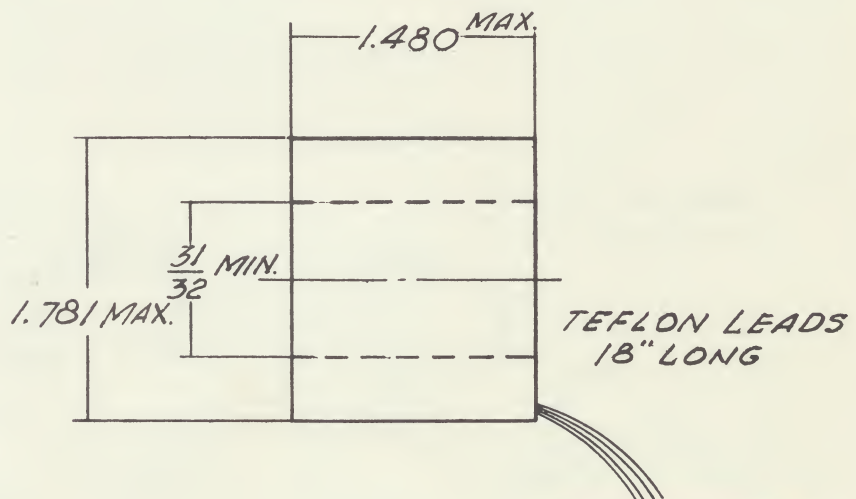
Perpendicularity	± 0.5 Degree
Colinearity (Push-Pull)	± 0.5 Degree
Residual Magnetism	0.3% Max.
Linearity (See Y2B)	± 0.3%
Breakdown Voltage	500 V.
Dist. Capacitance	25 to 100 pfd.

MECHANICAL

Overall Length	1.480" Max.
Outside Diameter	1.781" Max.
Inside Diameter	$\frac{31}{32}$ " Min.
Weight	$3\frac{3}{4}$ Oz.

8 Leads Color-Coded (Push-Pull)
4 Leads Color-Coded (Single-Ended)
Special Leads on Request

- Built to Rigid Celco Precision Standards Traceable to NBS.
- Low Astigmatism — Resolution Achieved Not Possible with Ordinary Yokes
- Minimum Inductance with Maximum Sensitivity
- Low Residual — Special Magnetic Material Designed, Fabricated and Controlled Atmosphere Annealed — by Celco
- Assure Your Performance by Using Celco Yokes, Made by "Earth's Leading Yoke Specialists"
- Celco Drivers — Compatible with Mini-Yokes (See Deflection Amplifier Section)



CELCO MINIATURE DEFLECTION YOKES

For 52° Cathode Ray Tubes with 7/8" Neck Diameter

PUSH-PULL DEFLECTION COIL DATA FOR 26° DEFLECTION WITH 7KV ANODE VOLTAGE

TYPE MY514-P PUSH-PULL FOR 7/8" CRT NECK HALF-AXIS VALUES (Red to Red/White)

Type No.	† Inductance @ .1KC Millihenries	Resistance Ohms. Max.	Current Amperes I _d	For 100 Volts Induced Yoke Voltage Sweep Time μS	* Coil Current Recovery Time to 1% μS
MY514-P700	.01	.13	6.1	.61	< 1.0
MY514-P680	.015	.2	5.0	.74	< 1.0
MY514-P670	.02	.3	4.3	.86	< 1.0
MY514-P620	.06	.8	2.5	1.5	< 1.0
MY514-P600	.10	1.4	2.0	1.9	< 1.0
MY514-P560	.25	3.3	1.2	3.0	< 1.0
MY514-P530	.5	6.5	.9	4.3	< 1.0
MY514-P500	1.0	13.0	.61	6.1	1.0
MY514-P450	3.0	39.0	.35	10.0	1.7

SINGLE-ENDED DEFLECTION COIL DATA FOR 26° DEFLECTION WITH 7KV ANODE VOLTAGE

TYPE MY514-S SINGLE-ENDED FOR 7/8" CRT NECK FULL-AXIS VALUES (Orange to Orange/White)

MY514-S700	.01	.07	6.1	.61	< 1.0
MY514-S680	.015	.10	5.0	.74	< 1.0
MY514-S670	.02	.15	4.3	.86	< 1.0
MY514-S620	.06	.40	2.5	1.5	< 1.0
MY514-S600	.10	.70	2.0	1.9	< 1.0
MY514-S560	.25	1.65	1.2	3.0	< 1.0
MY514-S530	.5	3.25	.9	4.3	< 1.0
MY514-S500	1.0	6.5	.61	6.1	1.0
MY514-S450	3.0	19.5	.35	10.0	1.7

† Inductance Value is for Vertical (Up)
Push-Pull and Horizontal, Single Ended

Inductance Ratios: Push-Pull

Vertical (Up) Nominal ± 10%

Vertical (Down)/Vertical (Up) .9

Horizontal (Left)/Vertical (Up) 1.02

Horizontal (Right) Vertical (Up) .95

Inductance Ratios: Single Ended

Horizontal Tabulated ± 10%

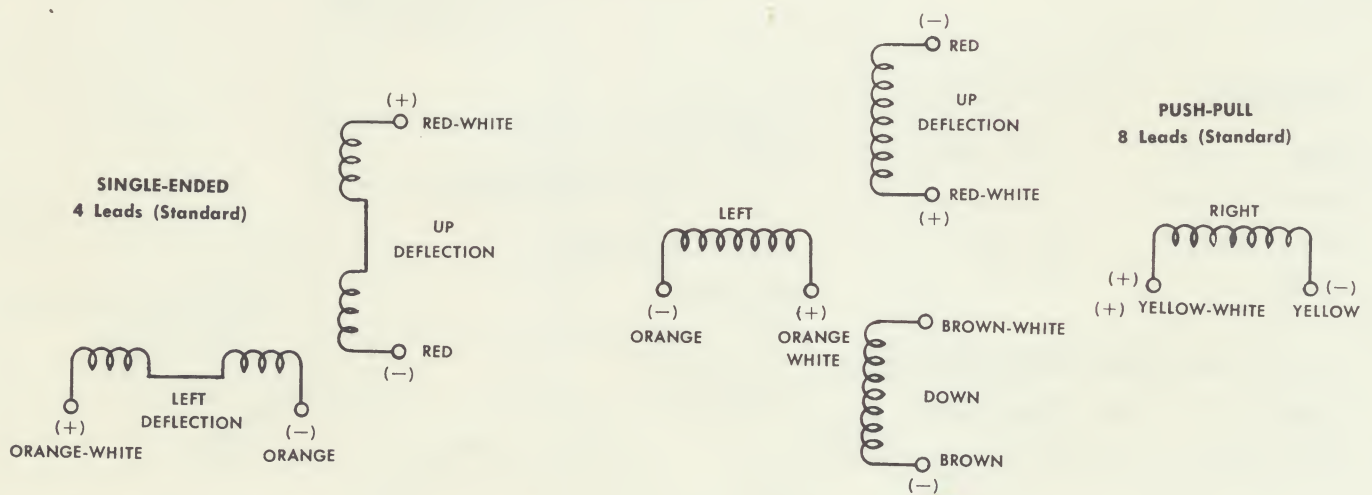
Vertical/Horizontal 1.07

* Recovery Time Values refer to Coil Cur-
rent to 99.0% Decay, Yoke Coils Criti-
cally damped, with 15 pfd Plate Lead
Stray Capacity.

Balanced Inductances made on Special
Order.

Vertical and Horizontal Coils may be
regrouped for any type. Specials im-
mediately available.

NOTE: Any information regarding your
application will be helpful to our design-
ers. Please use our customer yoke design
sheet to supply description.



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